Jet Propulsion Laboratory
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August 6, 2003

To Whom It May Concern:

Subject: Request for Proposal (RFP) No. FDO-573588 for the Terrestrial Planet Finder (TPF) Telescope Front End (TFE) Study Phase

The Jet Propulsion Laboratory (JPL) is soliciting proposals for the Terrestrial Planet Finder (TPF) Telescope Front End (TFE) Study. The purpose of this RFP is to define the TFE study phase requirements and subsequent Implementation phase tasks and deliverables that will provide a TFE with the capability to supply an optical signal to the High Contrast Imaging Testbed (HCIT) that is representative of the signal that will be supplied by a full sized TPF telescope. Once integrated with the HCIT, the TFE will be used to assess the feasibility of a visible-light coronagraph for meeting the TPF mission objectives.

JPL invites your organization to submit a proposal for the TFE Study Phase in conformance with the information and instructions contained herein.

TPF Mission Overview

The TPF Mission is one of the key elements of NASA's Navigator Program and is a major roadmap mission in the Astronomical Search for Origins science theme in NASA's Office of Space Science (OSS). The TPF Mission is to directly detect and characterize Earth-like planets in the habitable zone around as many as ≈50 -150 stars out to distances as great a 15 parsecs (pc). TPF is managed by JPL and is currently in the Advance Study Phase. The Project is expected to enter Formulation Phase in FY2007, Implementation Phase in FY2011, and to launch in FY2015.

TPF will have the sensitivity of a space-borne telescope and the high spatial resolution necessary for the detection and characterization of planetary systems. A structurally connected interferometer version of TPF will be able to distinguish planets from their parent stars by suppressing the starlight by a factor of more than 10^5 and thereby reveal planetary systems. In addition to determining the size, temperature, and orbital location of planets as small as the Earth in the habitable zones of distant planetary systems, TPF's spectroscopic capabilities will allow atmospheric chemists and biologists to assess, from the relative proportions of gases like carbon dioxide, water, ozone, and methane, whether a planet someday could, or even presently does, support life.

TPF will advance our understanding of planet formation by resolving disk structures and planetary systems on the scale of a few tenths of an astronomical unit (AU), allowing us to investigate how gaseous and rocky planets form out of accreting disk material. Current observations show that the disks of forming stars are tens to hundreds of AU across, but almost nothing is known about the inner regions of forming planetary systems where planets are thought to be born. By studying the emission from dust, ices of water and carbon dioxide, and gasses such as carbon monoxide and molecular hydrogen, TPF will investigate whether, as theory predicts, rocky planets form in warmer regions and gaseous planets in colder regions of a nascent planetary system.

TPF will also investigate many other astrophysical sources where observations of milliarcsecond class structures are critical to understanding the essential physical processes.

For further information related to TPF studies performed in the past and the current TPF Technology Plan, please refer to documentation available at the following web sites.

http://planetquest.jpl.nasa.gov/TPF/TPFrevue/FinlReps/JPL/tpfrpt1a.pdf
http://planetquest.jpl.nasa.gov/Navigator/tpf_library.html
http://planetquest.jpl.nasa.gov/TPF/index.html

TPF TFE Overview

Under previous TPF project activity, the technology candidates for the final TPF mission architecture have been narrowed to two; a "Visible Coronagraph" technology and an "IR Nulling Interferometer" technology. The next critical activity is to evaluate the relative merits and risks of these two technologies in order to make the selection of TPF mission architecture in FY2006. In this regard, the TPF Telescope Front End (TFE) is a key component of the process to gather and analyze the data necessary to make that selection.

Procurement of the TPF TFE will take place in two phases as follows:

- Phase 1 is a Study to develop the TPF TFE design concepts. One or more designs may be proposed. The Study Phase will be approximately 8 months in duration.

- Phase 2 is the Implementation of the TPF TFE with the objective of providing valuable experimental information applicable to visible-light coronagraphs by providing a realistic input, including disturbances, to the TPF HCIT. This information, combined with results of other technology development tasks related to visible light coronagraph technology, will be used to enable selection of the TPF architecture. The Implementation Phase will be approximately 16 months in duration.

It is anticipated that Phase 1 awards will be made to three contractors however JPL reserves the right to award more or less than three. The contracts will be awarded via the JPL competitive source evaluation and source selection process. At the conclusion of Phase 1, a down-select is anticipated with one contractor continuing into Phase 2. The down-select process will be as described in the RFP section 6.0 and will be based on Phase 1 deliverables described in the specimen contract. JPL may elect to fund additional contractors to perform a full or reduced scope Implementation phase or risk reduction activities.

Potential bidders must have established capability in the applicable technology and familiarity with TPF mission requirements. Potential bidders may wish to form teams including academic and industrial partners.

Procurement Process Summary

Proposals are to include detailed information on technical, management, and related experience topics for Phase 1 (Study Phase) and a general approach with capability information and a non-

binding, non-evaluated ROM cost estimate for Phase 2 (Implementation Phase). One of the key deliverables of Phase 1 will be the detailed proposal for Phase 2.

The Phase 1 Study Phase contracts will be Firm Fixed Price and are planned to be $200,000.00 each. The Phase 2 Implementation Phase contract will be a Cost Plus Fixed Fee and is planned to be in the $2 million to $3 million range. Selection of winning Phase 1 proposals will be based on the technical and management criterion stated in the RFP.

Only contractors selected for Phase 1 will be considered for a Phase 2 award. JPL therefore plans to negotiate and award the Phase 2 contract based on Phase 1 performance and results and Phase 2 proposals without further competition. Proposals submitted in response to this RFP must therefore establish contractor's capability to perform both the Phase 1 and Phase 2 efforts. JPL's obligation to fund contract awards for either Phase 1 or Phase 2 under this RFP is contingent upon the availability of funds and the receipt of Phase 1 study reports and Phase 2 proposals that JPL determines are acceptable for award.

Phase 1 proposals are due at JPL no later than 3:00pm PDT on September 19, 2003. JPL may conduct oral and/or written discussions and may, as a result, request proposal deltas to correct errors, omissions or ambiguities in the proposal. Only those deltas specifically requested by JPL will be accepted. Contract award is anticipated on or before October 30, 2003.

Interested bidders are requested to provide to the undersigned, no later than August 22, 2003, a written statement indicating their intent to submit a proposal.

All questions and correspondence related to this procurement should be directed to the undersigned. Responses will be provided formally via the JPL acquisition web site at http://acquisition.jpl.nasa.gov. Potential bidders are encouraged to check this web site regularly for addenda to this RFP.

Sincerely,

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Attachments: (1) RFP No. FDO-573588 dated August 6, 2003
(2) Specimen Contract dated August 4, 2003